

# **Historic, Archive Document**

Do not assume content reflects current  
scientific knowledge, policies, or practices.



Reserve  
1.96  
R 31 Sm



*"Western Treasure -- Deep, Wet Snow"*

FEDERAL-STATE COOPERATIVE  
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

ARIZONA

JANUARY 15, 1948

By

Division of Irrigation, Soil Conservation Service  
United States Department of Agriculture

---

Data included in this report were obtained by the agency named above in cooperation with the Federal, State, and local organizations listed on the last page of this report.



FEDERAL-STATE COOPERATIVE  
SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
FOR  
ARIZONA

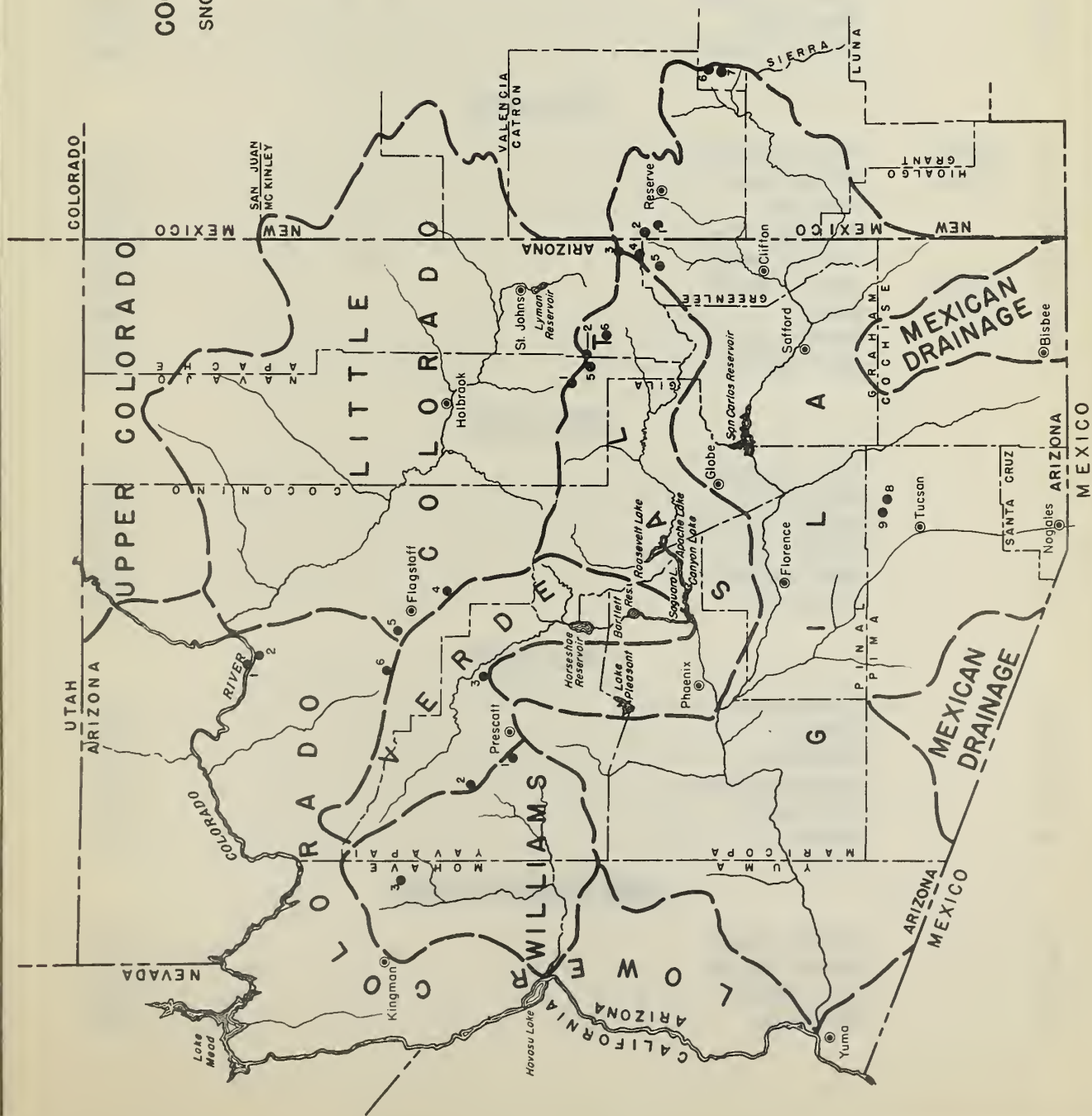
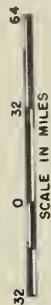
Report Prepared  
by  
Clyde E. Houston-Hydraulic Engineer

Division of Irrigation  
Soil Conservation Service  
Reno, Nevada



# ARIZONA COOPERATIVE SNOW SURVEYS SNOW COURSES AND DRAINAGE BASINS

October 1947





# INDEX TO SNOW COURSES

NUMBER	NAME	ELEVATION
--------	------	-----------

## LITTLE COLORADO RIVER

1.	Forest Dale . . . . .	6,000
2.	McNary . . . . .	7,200
3.	Nutrioso . . . . .	8,500
4.	Mormon Lake . . . . .	7,350
5.	Fort Valley . . . . .	7,350

## WILLIAMS RIVER

1.	Iron Springs . . . . .	6,200
2.	Camp Wood . . . . .	5,700
3.	Willow Ranch . . . . .	5,000

## GILA RIVER

1.	(N.M.) Frisco Divide . . . . .	8,000
2.	(N.M.) State Line . . . . .	8,000
3.	Nutrioso . . . . .	8,500
4.	Coronado Trail . . . . .	8,000
5.	Beaver Head . . . . .	8,000
6.	(N.M.) Taylor Creek . . . . .	7,850
7.	(N.M.) Inman . . . . .	7,800
8.	Rose Canyon . . . . .	7,300
9.	Bear Wallow . . . . .	8,100

## VERDE RIVER

1.	Iron Springs . . . . .	6,200
2.	Camp Wood . . . . .	5,700
3.	Mingus Mountain . . . . .	7,100
4.	Mormon Lake . . . . .	7,350
5.	Fort Valley . . . . .	7,350
6.	Chalender . . . . .	7,100

## SALT RIVER

1.	Forest Dale . . . . .	6,000
2.	McNary . . . . .	7,200
3.	Nutrioso . . . . .	8,500
4.	Coronado Trail . . . . .	8,000
5.	Milk Ranch . . . . .	7,000
6.	McKay . . . . .	8,250

## LOWER COLORADO RIVER

1.	Bright Angel . . . . .	8,400
2.	Grand Canyon . . . . .	7,500
5.	Fort Valley . . . . .	7,350
6.	Chalender . . . . .	7,100



## WATER SUPPLY OUTLOOK

### Arizona

January 15, 1948

\* \* \* \* \*  
\* January 15, 1948 snow surveys indicate that \*  
\* Arizona's drought will continue. Snow water\*  
\* content on all watersheds is far below nor- \*  
\* mal. Due to heavy storms in October 1947 \*  
\* stream discharge since October is above nor-\*  
\* mal on some watersheds. The coming seasons \*  
\* irrigation supplies will be extremely short \*  
\* as major reservoirs at this time contain \*  
\* less than seven percent of capacity. Only \*  
\* heavy storms during the remainder of the \*  
\* winter will alleviate the extreme losses in \*  
\* prospect for water users. \*  
\* \* \* \* \*

Precipitation Above average precipitation occurred throughout Arizona during October but in general it has been deficient up to the present. Soil moisture conditions on the higher elevations have been good although unseasonably warm weather is thawing the ground and increasing evaporation losses. Future precipitation must replenish these losses before resultant runoff can contribute to valley water supplies. Soil moisture conditions in the irrigated valleys are poor. Cattle are being moved to other areas due to lack of pasture.

Snow Cover In all areas snow cover as of January 15, 1948 is below normal. On the headwaters of Little Colorado and Salt it is about 35 and 30 percent respectively of average but only 20 and 25 percent of last year. Gila River Watershed contains about 40 percent of average and about 90 percent of last year. Abnormally high temperatures are melting the snow cover at the higher elevations resulting in losses of snow stored water which would ordinarily become available during the irrigation season.



Runoff From October 1947 to date stream discharge of Little Colorado and Salt Rivers was above normal while Verde and Gila continues below normal. The above normal discharge of Little Colorado and Salt can be attributed to heavy October storms. The deficiency of snow stored water at this time indicates that runoff will probably become acute during the spring and summer.

Reservoir Storage Storage in Arizona reservoirs has reached the stage of critical shortage. In all instances storage is below last years extreme low. San Carlos with a capacity of 1,200,000 acre-feet is empty. Lake Pleasant with a capacity of 179,000 acre-feet contains less than 1,000 acre-feet. Horseshoe and Bartlett on the Verde River contain 6,375 acre-feet compared to their combined capacity of 246,000 acre-feet. The series of reservoirs on Salt River contain only 228,000 acre-feet compared to 426,000 acre-feet last year. Combined storage in the major reservoirs in the State is less than 25 percent of average for this date and less than 50 percent of last year. Lake Mead is storing more water than last year with over 20,000,000 acre-feet, which is approximately average.

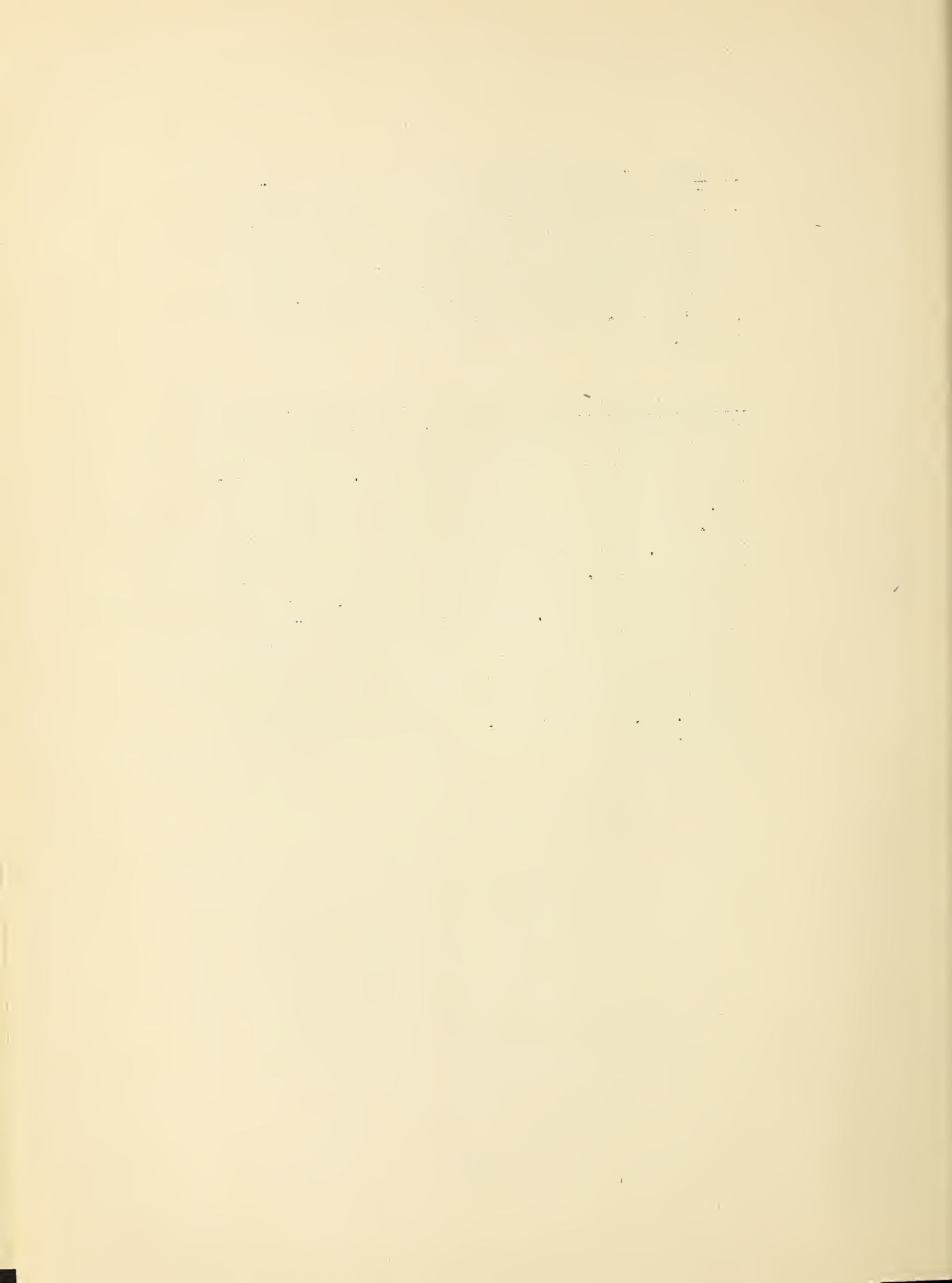


TABLE I

## ARIZONA SNOW SURVEYS JANUARY 15, 1948

LOCATION		SNOW COVER MEASUREMENTS										
		Water Content (Inches)				Past Record						
DRAINAGE BASIN and SNOW COURSE	Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (Inches)	1948	Same		Years of Record	Av. Water Content (Inches)
									1947	1946		
LITTLE COLORADO RIVER												
Forest Dale	1	2	9N	21E	6000	1/17	1.0	0.4	1.5	1.5	9	1.0
McNary	2	14	8N	23E	7200	1/17	2.6	0.3	2.5	1.6	9	2.2
Nutriosio	3	23	6N	30E	8500	1/15	2.1	0.7	1.6	1.8	9	1.7
Mormon Lake	4	13	18N	8E	7350	1/15	0	0	2.7	New Course	2	1.4
Fort Valley	5	22	22N	6E	7350	1/15	1.1	0.4	1.6	New Course	2	1.1
WILLIAMS RIVER												
Iron Springs	1	22	14N	3W	6200	1/15	0	0	0	1.3	3	0.4
Camp Wood	2	3	16N	6W	5700	1/15	0	0	0	0.2	3	0.1
Willow Ranch	3	16	21N	11W	5000	1/15	0	0	0	0	3	0
GILA RIVER												
Frisco Divide	1	31	6S	20W	8000	1/15	5.4	1.4	0.6	1.3	9	1.7
State Line	2	6	6S	21W	8000	1/15	2.9	0.7	1.4	1.6	9	2.2
Nutriosio	3	23	6N	30E	8500	1/15	2.1	0.7	1.6	1.8	9	1.7
Coronado Trail	4	26	5N	30E	8000	1/15	3.6	1.2	1.8	1.7	9	2.6
Beaver Head	5	13	4N	30E	8000	1/15	4.1	1.2	1.1	3.4	9	2.6
Taylor Creek	6	20	10S	10W	7850	1/15	No Report	Report	0.9	No Survey	4	1.0
Inman	7	6	11S	10W	7800	1/15	"	"	0.9	New Course		
Rose Canyon	8	15	12S	16E	7300	1/15	0	0	New	Snow Course		
Bear Wallow	9	6	12S	16E	8100	1/15	0	0	"	"		



TABLE I

ARIZONA SNOW SURVEYS JANUARY 15, 1948

LOCATION		SNOW COVER MEASUREMENTS											
		Water Content (Inches)							Past Record				
		Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (Inches)	Same Approx. date		Years of Record	Av. Water Content (Inches)	
1948	1947								1946				
DRAINAGE BASIN and SNOW COURSE													
VERDE RIVER													
Iron Springs	1	22	14N	3W	6200	1/15	0	0	0	1.3	3	0.4	
Camp Wood	2	3	16N	6W	5700	1/15	0	0	0	0.2	3	0.1	
Mingus Mountain	3	3	15N	2E	7100	1/15	0	0	0.1	New Course	2	0.1	
Mormon Lake	4	13	18N	8E	7350	1/15	0	0	2.7	"	2	1.4	
Fort Valley	5	22	22N	6E	7350	1/15	1.1	0.4	1.6	"	2	1.0	
Chalender	6	27	22N	3E	7100	1/15	8.0	2.3	1.3	"	2	1.8	
SALT RIVER													
Forest Dale	1	2	9N	21E	6600	1/17	1.0	0.4	1.5	1.5	9	1.0	
McNary	2	14	8N	23E	7200	1/17	2.6	0.3	2.5	1.6	9	2.2	
Nutriosio	3	23	6N	30E	8500	1/15	2.1	0.7	1.6	1.8	9	1.7	
Coronado Trail	4	26	5N	30E	8000	1/15	3.6	1.2	1.8	1.7	9	2.6	
Milk Ranch	5	28	8N	23E	7000	1/17	0	0	1.9	1.4	8	1.3	
LOWER COLORADO RIVER													
Bright Angel	1	34	33N	3E	8400	1/14	13.8	4.6	New Snow Course				
Grand Canyon	2	21	30N	4E	7500	1/16	1.5	0.6	"	"			
Fort Valley	5	22	22N	6E	7350	1/15	1.1	0.4	1.6	New Snow Course	2	1.0	
Chalender	6	27	22N	3E	7100	1/15	8.0	2.3	1.3	"	2	1.8	





TABLE 2

STATUS OF RESERVOIR STORAGE, January 15, 1948

BASIN and STREAM	RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE FEET IN STORAGE About Jan. 15				
			1948	1947	1946	1945	10-Yr. Avg. 1937- 1946
Agua Fria	Lake Pleasant	179	1	3	3	2	17
Colorado	Lake Havasu	688	582	602	572	577	506 <sup>a</sup>
Colorado	Lake Mead	27,935	20,320	17,603	19,417	19,908	20,956 <sup>a</sup>
Gila	San Carlos	1,200	0	14	18	92	203
Salt River	Salt River <sup>c</sup>	1,771	228	426	721	852	743
Verde	Bartlett	179	5	38	7	8	49 <sup>b</sup>
Verde	Horseshoe	67	2	10	10	New Reservoir	

a - Average for years 1939 through 1946

b - Average for years 1941 through 1946

c - Includes Roosevelt, Apache, Saguaro and Canyon Lakes



# LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Forest Dale . . . . .	Ward Kindred
McNary . . . . .	Ward Kindred
Nutrioso . . . . .	R.L. Diggs
Mormon Lake . . . . .	M.F. Greaves
Fort Valley . . . . .	Laska & Martin
Iron Springs . . . . .	E. Saxby
Camp Wood . . . . .	C.C. Merritt
Willow Ranch . . . . .	T. Miller
Frisco Divide . . . . .	Dean Earl
State Line . . . . .	Dean Earl
Coronado Trail . . . . .	R.L. Diggs
Beaver Head . . . . .	Jes Burke
Rose Canyon . . . . .	Wm. Hughes
Bear Wallow . . . . .	Wm. Hughes
Mingus Mountain . . . . .	Harold Linn
Chalender . . . . .	V. Schroeder
Milk Ranch . . . . .	Ward Kindred
Bright Angel . . . . .	H.Brown, A.Brown & W.James
Grand Canyon . . . . .	W.J. Kennedy



The following organizations cooperate in the Arizona snow survey work:

STATE

Nevada Agricultural Experiment Station  
Reno, Nevada

FEDERAL

Department of Agriculture  
Forest Service  
Apache Forest  
Coconino Forest  
Coronado Forest  
Gila Forest  
Kaibab Forest  
Prescott Forest  
Southwestern Forest and Range Expt.  
Station, Fort Valley, Arizona  
Soil Conservation Service  
Division of Irrigation

Department of Commerce  
Weather Bureau  
Arizona Section

Department of Interior  
Bureau of Reclamation  
Region III  
Geological Survey  
Arizona District  
Indian Service  
Fort Apache Reservation  
National Park Service  
Grand Canyon National Park

Gila Water Commissioner  
Safford, Arizona

IRRIGATION PROJECTS

Salt River Valley Water Users Association  
Phoenix, Arizona

San Carlos Irrigation and Drainage District  
Coolidge, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

